

State of Iowa

1967



**CERTIFICATION OF  
WATER SUPPLY SYSTEM  
AND  
WASTEWATER TREATMENT  
PLANT OPERATORS**



**Environmental Engineering Service**  
STATE DEPARTMENT OF HEALTH

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## FOREWORD

The certification of operators of water supply systems and wastewater treatment plants is an important adjunct to environmental health practices and safeguards. Through this increased assurance of the competency of these operators, the public can expect and receive the necessary protection of the facilities concerned; the preservation of water as a resource; and most important, protection of the public health.

The general implementation of the Certification Law marks an important step forward in public health and in the establishment and conduct of an effective environmental health program. The observance of the basic law and the adherence to the governing rules and regulations are vital for public health and water resource protection.

A large, stylized handwritten signature in dark ink, appearing to read 'Arthur F. Long'.

Arthur F. Long, M.D., Dr. P.H.  
Commissioner of Public Health

December 12, 1966

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# **Certification of Water Supply System and Wastewater Treatment Plant Operators**

The 61st General Assembly of the State of Iowa enacted a bill requiring the operator with direct responsibility of water supply systems and wastewater treatment plants to become certified.

The primary purpose of this material is to supply local officials with information about the certification program. It explains how the operator can become certified. A copy of the law is also included along with the Rules and Regulations for administration of the Certification Law. This booklet should be retained for future reference.

## **WHY IS THERE A NEED FOR COMPETENT OPERATION?**

The Certification Law was passed to protect the public health and to conserve and protect the water resources of the state.

Much of the investment - a huge investment - for water supply systems is buried underground in miles of water mains or wells or invested in costly treatment facilities. Improper operation can seriously damage the facilities causing excessive maintenance or higher operating costs. Even though these facilities are, in large measure, "out-of-sight," they cannot be "out-of-mind." Skilled operation not only protects the investment in the facilities but safeguards the public health and offers the degree of protection to which the consumer is entitled. This utility provides a convenience which the consumer will not do without - even though he is seldom aware of or appreciates the silent service.

A wastewater treatment plant operator also plays a vital part in the public health of the community as well as protecting the water resources. Often below the outlet, there will be boating, fishing, swimming, skiing, etc. Obviously, disease causing bacteria and organic substances must be reduced before these activities can take place.

The public seldom comments on the excellent operation of a treatment facility, but complaints don't end with the operator when poor operation takes place.

Adequate facilities must be provided by the local officials to accomplish the purpose intended. Then these facilities must be operated in an efficient and economical manner with skilled, technically sound operation. The operators must have the constant support of the governing body to accomplish these goals.

## **WHAT TYPES OF CERTIFICATES ARE GIVEN?**

- A) The law provides for a certificate without examination to any operator having direct responsibility on the effective date of the law (July 4, 1965). However, the certificate issued in this

manner is valid only for the facilities at that particular location and cannot be transferred to another municipality. This restriction is stated on the certificate.

- B) A certificate obtained by examination bears no restrictions and can be transferred to another municipality with the same grade or lesser grade of facilities. This certificate would be in full compliance with the law for the operator having direct responsibility.

Certificates are issued in the following three categories:

1. Water Distribution System Operator
2. Water Treatment Plant Operator
3. Wastewater Treatment Plant Operator

Definitions of each of the above categories are given in Sections 136A.1 of the law (page 6).)

#### WHAT SYSTEMS MUST HAVE A CERTIFIED OPERATOR?

Essentially any public water supply or a wastewater treatment plant of a municipality or sanitary district must have a certified operator according to the law. If a municipality has a well as the water source with absolutely no form of treatment, it is called a water distribution system. It is the opinion of the Board of Certification that when the same individual has direct responsibility of both the water distribution system and the water treatment plant, a certificate only in the water treatment plant category is necessary to meet the provisions of the law. If different people are responsible for each portion, then certificates in each category are required.

#### WHO MUST BE CERTIFIED?

The law provides that the operator having "direct responsibility" must have a certificate. The definition of "direct responsibility" is given in Section 1.4 of the Rules and Regulations (page 10). Essentially this definition is intended for the person who provides day-to-day operation of the facilities. A person who gives only general administrative supervision is not required to be certified.

#### WHAT IS THE CLASSIFICATION OF YOUR PLANT?

There are four grades of water and wastewater treatment plants and three grades of water distribution systems established. An operator who has direct responsibility must hold a certificate of equal or higher classification than that which the plant is classified. The system for classification of plants is given in Sections 3, 4, and 5 (pages 11 - 12) of the Rules and Regulations.

#### WHAT ARE THE OPERATOR EDUCATION AND EXPERIENCE QUALIFICATIONS?

Along with certain levels of education, experience is a very valuable asset in the technical aspects of operation. The need for this is variable considering the wide range of complexity in operation of various types of systems and plants. Therefore, various levels of education and experience are required according to the grade of the

plant. Section 6 of the Rules and Regulations (pages 13 - 14) outlines the required levels according to the various grades of plants.

#### **HOW DO YOU OBTAIN A CERTIFIED OPERATOR?**

In order for an individual to become a certified operator, certain requirements must be fulfilled. The local officials should be aware of the necessary requirements concerning employment, experience, and education. The operator's education and experience should be compared to the requirements as given in the Rules and Regulations, Section 6 (pages 13-14) for the grade of plant involved.

If a person appears to meet the minimum requirements, he should then submit an application to the Board of Certification for their review. The board will review the application and then correspond directly with the applicant concerning requirements which might be necessary. The application should be accompanied by the fee which is stated on the application form.

Application forms may be requested now or any correspondence concerning the certification program should be directed to:

SECRETARY, BOARD OF CERTIFICATION  
ENVIRONMENTAL ENGINEERING SERVICE  
STATE DEPARTMENT OF HEALTH  
DES MOINES, IOWA 50319

#### **CAN THERE BE CERTIFICATION OF OPERATORS WHO ARE NOT IN DIRECT RESPONSIBILITY?**

The certification program is available to all operators even though they may not be in direct responsibility. The local officials may require other operators to become certified or the other operators may elect on their own initiative to become certified. The Board of Certification feels there are many benefits in encouraging all eligible persons to become certified.

#### **MUST THERE BE RENEWAL OF CERTIFICATES?**

The law states there shall be annual renewal of the certificates. The renewal date is July 1 of each year. Approximately two months prior to July 1, the Board will mail a renewal notice to each certified operator at the last address on record. The operator should notify the Board of any changes of address.

#### **WHO ADMINISTERS THE CERTIFICATION PROGRAM?**

The law provides for the Commissioner of Public Health and a five-member board to administer the program. The board is composed of a water works operator, wastewater treatment plant operator, a municipal official, a university faculty member, and an employee of the State Department of Health.

#### **WHAT BASIC TRAINING COURSES ARE AVAILABLE?**

Several groups in the state have recognized the need for training specifically with water supply systems and wastewater treatment



plants. There are approximately 1,200 plants in the state which are required to have a certified operator. Local governing bodies are interested in sending their operators to obtain training specifically for the area in which they are concerned. This training, along with experience, will provide the operators with the sound technical background to properly operate the facilities.

Basic Training Courses have been established to provide the basis for the educational program. These sessions are held for three hours, one afternoon or night a week and last for nine consecutive weeks. Not only are lectures given during these sessions, but open discussion is encouraged among the operators to share mutual problems. Lecture notes, together with books, are given to each person enrolling in the course.

Six locations have been selected across the state to hold these courses. These centers are Washington, Manchester, Indianola, Belmond, Atlantic, and Cherokee. It is hoped that a course in water and wastewater will be held at each of these locations once each year. It is anticipated the course will be held at Manchester, Belmond, and Cherokee in the spring of the year; Indianola during early summer; and at Washington and Atlantic during early fall.

Information concerning Basic Training Courses will be mailed to each municipality in the general vicinity prior to a scheduled session. If local officials desire additional copies mailed to a particular operator, the Secretary, Board of Certification, should be notified.

The Board of Certification recommends and encourages all operators to attend and actively participate in training schools, annual meetings, and programs. Through these efforts, it is felt the operators become more qualified, through education in their specific field, to do a better job for the community; to protect the investment in the facilities; to protect the public health along with conserving and protecting the water resources of the state.

The sponsoring or supporting organizations of the Basic Training Courses are the State Department of Health, Iowa State University, University of Iowa, Iowa Vocational Education Division, Iowa Water Pollution Control Association, and the Iowa Section of the American Water Works Association.

#### **HOW DO YOU OBTAIN AVAILABLE REFERENCE MATERIAL?**

The following list of reference material includes books covering basic operational procedures and fundamental principles of water supply and wastewater treatment. A library that includes some of this reference material is recommended.

To provide further educational material for water supply system and wastewater treatment plant personnel, membership in the Iowa Section of the American Water Works Association and Iowa Water Pollution Control Federation is encouraged. Membership includes monthly journals that contain numerous articles of interest to operators. In addition to the monthly journals, many publications are available to members of these organizations at a reduced fee.

1. Manual of Instructions for Water Treatment Plant Operators, Health Education Service, P.O. Box 7283, Albany, N.Y. 12224 (\$1.00)

2. Manual for Water Plant Operators by A. A. Hirsch, Chemical Publishing Co., 212 Fifth Avenue, New York, N.Y. 10010 (\$6.50)
3. Public Health Service Drinking Water Standards 1962, Publication No. 956, Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20025. (30¢)
4. Manual for Water Treatment Plant Operators, Texas Water and Sewage Works Association, 2202 Indian Trail, Austin, Texas 78703. (\$9.00)
5. Tentative: American Water Works Association Manual of Water Plant Operation - Scheduled to be available in 1967, American Water Works Association, Inc., 2 Park Avenue, New York, N.Y. 10016. (Price not available)
6. A Training Course in Water Distribution, Manual No. 8, American Water Works Association, Inc., 2 Park Avenue, New York, N.Y. 10016 (\$2.00 members - \$4.00 non-members)
7. Safety Practice for Water Utilities, Manual M-3, American Water Works Association, 2 Park Avenue, New York, N.Y. 10016 (\$1.50 members - \$3.00 nonmembers)
8. Manual of Instruction for Sewage Treatment Plant Operators, Health Education Service, P.O. Box 7283, Albany, N.Y. 12224. (\$1.25)
9. Operation of Wastewater Treatment Plants, Manual of Practice Number 11, Water Pollution Control Federation, 3900 Wisconsin Ave., Washington, D.C. 20016. (\$2.00 members - \$3.00 nonmembers)
10. Manual for Sewage Plant Operators, Texas Water and Sewage Works Association, 2202 Indian Trail, Austin, Texas 78703. (\$9.00)
11. Safety in Wastewater Works, Manual of Practice No. 1, Water Pollution Control Federation, 3900 Wisconsin Avenue, Washington, D.C. 20016 (\$0.75 members - \$1.50 nonmembers)



## CHAPTER 136A, CODE OF IOWA, 1966

### AN ACT

TO PROTECT THE PUBLIC HEALTH AND TO CONSERVE AND PROTECT THE WATER RESOURCES OF THE STATE BY CLASSIFYING ALL PUBLIC WATER SUPPLY SYSTEMS AND WASTEWATER TREATMENT PLANTS IN THIS STATE AND BY REQUIRING THE EXAMINATION OF OPERATORS AND CERTIFICATION OF THEIR COMPETENCY TO SUPERVISE THE OPERATION OF SUCH FACILITIES.

136A.1 DEFINITIONS. As used in this Act:

1. "Commissioner" is the commissioner of public health.
2. "Board" is the board of certification.
3. "Certificate" is the certificate of competency issued by the commissioner stating that the operator has met the requirements for the specified operator classification of the certification program.
4. "Water supply system" is the system of pipes, structures, and facilities through which a public water supply is obtained, treated and sold or distributed for human consumption or household use.
5. "Water treatment plant" is that portion of the water supply system which in some way alters the physical, chemical, or bacteriological quality of the water.
6. "Wastewater treatment plant" is the facility or group of units used for the treatment of wastewater from public sewer systems and for the reduction and handling of solids removed from such wastes.
7. "Water distribution system" is that portion of the water supply system in which water is conveyed from the water treatment plant or other supply point to the premises of the consumer.
8. "Operator" is the person who has direct responsibility for the operation of a water treatment plant, water distribution system, or wastewater treatment plant.

136A.2 CLASSIFICATION OF PLANTS AND SYSTEMS. The commissioner shall classify all water treatment plants, water distribution systems, and wastewater treatment plants affecting the public welfare with regard to the size, type, character of water and wastewater to be treated and other physical conditions affecting such treatment plants and distribution systems, and according to the skill, knowledge, and experience that an operator must have to supervise the operation of said facilities to protect the public health and prevent pollution.

136A.3 CERTIFICATION BY COMMISSIONER. The commissioner shall certify persons as to their qualifications to supervise the operation of such treatment plants and water distribution systems after considering the recommendations of the board.

136A.4 BOARD OF CERTIFICATION. The commissioner shall appoint a board of certification composed of five (5) persons as follows: One (1) member who is a water works operator holding a valid certificate of the highest classification issued by the commissioner; one (1) member who is a wastewater works operator holding a valid certificate of the highest classification issued by the commissioner; one (1) member from the state department of health who is either the state sanitary engineer or a qualified member of his staff; one (1) member who is a university or college faculty member whose major field is related to water supply or wastewater collection and treatment; and one (1) member who is an employee of a municipality required to employ a certified operator, and who holds the position of either city manager, city engineer, director of public works or an equivalent position.

136A.5 MEMBERS APPOINTED. Each member of the board, with the exception of the member from the state department of health, shall be appointed for a three (3) year term, except in the case of the initial appointments the municipal representative shall be appointed for one (1) year, one (1) operator and the faculty member for two (2) years and the remaining operator for three (3) years. Vacancies shall be filled by appointment by the commissioner for unexpired terms.

136A.6 OFFICERS. Members of the original board, at the call of the commissioner, shall organize and elect from their number a chairman. Thereafter, a chairman shall be elected at each annual board meeting. The state health department representative of the board shall serve as secretary of the board and be responsible for maintaining records.

136A.7 EXAMINATION HELD. The board shall hold at least one (1) examination each year for the purpose of examining candidates for certification at a time and place designated by the board. Those applicants whose competency is acceptable to the board shall be recommended to the commissioner for certification. Additional meetings may be called by the chairman or commissioner as may be necessary to carry out the provisions of the Act. Three (3) members shall constitute a quorum.

136A.8 EXPENSES OF MEMBERS. The members of the board shall serve without compensation, except for their actual and necessary expenses incurred while discharging their official duties.

136A.9 CERTIFICATE ISSUED. When the commissioner is satisfied that an applicant is qualified by examination or otherwise, and upon recommendation of the board, the commissioner shall issue a certificate attesting to the competency of the applicant as an operator. The certificate shall indicate the classification of works which the operator is qualified to supervise.

136A.10 TERM OF CERTIFICATE. Certificates shall continue in effect for one (1) year from the date of issuance unless sooner revoked by the commissioner, but such certificates shall remain the property of the board and the certificate shall so state.

136A.11 REVOCATION. The commissioner may revoke the certificate of an operator, following a hearing before the commissioner or his des-

ignated representative, when it is found that the operator has practiced fraud or deception in obtaining the certificate or in the performance of his duties as an operator; when it is found that reasonable care, judgment, or the application of his knowledge or ability was not used in the performance of his duties; or when it is found that the operator is incompetent or unable properly to perform his duties as an operator.

136A.12 PRIOR CERTIFICATES HONORED. Certificates in appropriate classification shall be issued to operators, who, on the effective date of this Act, hold certificates of competency attained by examination under the voluntary certification program sponsored jointly by the state department of health, the Iowa section of the American water works association, and the Iowa water pollution control association.

136A.13 CERTIFICATION WITHOUT EXAMINATION. Certificates of proper classification shall be issued without examination to persons certified by a governing body or owner to have been the operator of a treatment plant or a water distribution system on the effective date of this Act. A certificate so issued will be valid only for that particular treatment plant or system, but shall remain in effect indefinitely unless revoked by the commissioner as provided in this Act.

136A.14 FEES. The commissioner with the approval of the board, is authorized to charge a fee for certificates issued under this Act, but such fees shall not exceed five (5) dollars for an initial certificate, nor more than three (3) dollars for the annual renewal certificate. All such fees collected shall be remitted to the treasurer of state, who shall hold such monies in a special fund to be known as the "operators certification fund," to be used by the state department of health to administer and enforce the provisions of this Act, and to pay the expenses of the board authorized in section eight (8) of this Act. Such fund shall be subject at all times to the warrant of the state comptroller, drawn upon written requisition of the commissioner and attested by the secretary of the board. Any remainder in such fund at the end of each fiscal year shall be paid into the general fund of the state.

136A.15 RULES. The commissioner, with the advice of the board, may promulgate such rules and regulations as are necessary to carry out the provisions of this Act.

136A.16 UNLAWFUL OPERATION. On and after one (1) year following the effective date of this Act, it shall be unlawful for any person, firm, corporation, municipal corporation, or other governmental subdivision or agency, operating a water treatment plant, water distribution system or wastewater treatment plant to operate same unless the competency of the operator to operate such plant or system is duly certified to by the commissioner under the provisions of this Act. It shall also be unlawful for any person to perform the duties of an operator, as defined herein, without being duly certified under the provisions of this Act.

136A.17 VIOLATIONS -- PENALTY. Any person, including any firm, corporation, municipal corporation, or other governmental subdivision

or agency, violating any provisions of this Act or the rules and regulations adopted thereunder after written notice thereof by the commissioner is guilty of a misdemeanor. Each day of operation in such violation of this Act or any rules or regulations adopted thereunder shall constitute a separate offense. Upon conviction, such persons shall be fined not exceeding one hundred (100) dollars, or be imprisoned in the county jail for not more than thirty (30) days, or by both such fine and imprisonment. It shall be the duty of the appropriate county attorney to secure injunctions of continuing violations of any provisions of this Act or the rules and regulations adopted thereunder.

# Rules and Regulations For Certification of Water Supply System and Wastewater Treatment Plant Operators

Pursuant to authority of section 135.11, subsection 17, Code of Iowa, 1962, and Chapter 162, section 15, Acts of the Sixty-first General Assembly, the following rules relating to the certification of operators of public water supply systems and wastewater treatment plants are hereby adopted.

## Section 1. DEFINITIONS.

1.1 The definitions set out in section 1 of Chapter 162, Acts of the 61st General Assembly, shall be considered to be incorporated verbatim in these rules.

1.2 "Public water supply" means any water supply, either publicly or privately owned, serving a municipality or a benefited water district serving a municipality.

1.3 "Plant" designates the facilities which treat the wastewater, water, or distribute the treated water.

1.4 "Direct responsibility" refers to that operator who has active field supervision of a water supply system or a wastewater treatment plant or who is required in the performance of the normal duties to give responsible, technical advice and part-time supervision of the technical aspects, rather than only general administrative supervision, of operation.

1.5 "Population equivalent" for a water treatment plant means the calculated population which would normally require the same amount of water, computed by dividing the average annual daily production of a water treatment plant in gallons by 100.

1.6 "Population equivalent" for a wastewater treatment plant means the calculated population which would normally contribute the same amount of bio-chemical oxygen demand (BOD) per day computed on the basis of 0.167 pounds of 5-day, 20°C, BOD per capita per day.

1.7 "Primary treatment" means the treatment process designed to remove from the sewage organic and inorganic settleable solids by the physical process of sedimentation.

1.8 "Trickling filter" means treatment process where the settled sewage is passed over a media onto which are attached biological organisms capable of oxidizing the organic matter normally followed by sedimentation.

1.9 "Activated sludge" refers to a biological sewage treatment process in which a mixture of sewage and sludge floc, produced in a raw or settled sewage by the growth of zooglycal bacteria and other organisms is agitated and aerated in the presence of a sufficient concentration of dissolved oxygen, followed by sedimentation.



1.10 "Waste stabilization lagoon" means an excavation designed and constructed to receive raw or pretreated sewage in which stabilization is accomplished by several natural self purification phenomena.

1.11 "Oxidation" means a process changing soluble iron and manganese to an insoluble form by the addition of oxygen to the compound by means of chlorine or potassium permanganate additions or mechanical aeration.

1.12 "Chlorination" means the addition of a chlorine compound or chlorine gas to water to protect the bacterial quality of the water.

1.13 "Stabilization" means the addition of chemical compounds to water to maintain an ionic equilibrium whereby the water is not in a depository or corrosive state.

1.14 "Aeration" means the bringing about of intimate contact between air and water by spraying the water in the air, bubbling air through the water or by forcing the air into the water by pressure.

1.15 "Fluoridation" means the adjustment of the fluoride ion concentration to produce the optimum fluoride concentration in the water.

1.16 "Zeolite softening" means the process of softening water by passing it through a substance known as a zeolite, which contains chemicals that are exchanged for the hardness-causing elements.

1.17 "Coagulation" means the agglomeration of colloidal or finely divided suspended matter by the addition to the water of an appropriate chemical coagulant.

## Section 2. GENERAL.

2.1 The census taken each decade, or a special census taken by the United States Bureau of Census, shall be used to determine the population served by a water supply system, or wastewater treatment plant if the population equivalent data is not available.

2.2 A plant having a combination of treatment processes which are in different grades shall be classified according to that process which requires the higher numerical classification.

2.3 Plants with sufficient population equivalent or sufficiently complicated processes may be raised to a classification higher than that indicated by population alone.

2.4 An operator who has direct responsibility shall hold a certificate of equal or higher classification than that which the plant is classified.

2.5 An operator, currently certified may obtain a duplicate certificate upon payment of two (2) dollars.

## Section 3. CLASSIFICATION OF WASTEWATER TREATMENT PLANTS.

<u>GRADE</u>	<u>TREATMENT</u>	<u>POPULATION</u>
I	Primary Treatment Waste Stabilization Lagoons	5,000 or less



<u>GRADE</u>	<u>TREATMENT</u>	<u>POPULATION</u>
II	Trickling Filter	5,000 or less
	Activated Sludge	2,000 or less
	Primary Treatment	5,000 to 15,000
III	Trickling Filter	5,000 to 15,000
	Activated Sludge	2,000 to 5,000
	Primary Treatment	15,000 to 50,000
IV	Trickling Filter	15,000 and over
	Activated Sludge	5,000 and over
	Primary Treatment	50,000 and over

#### Section 4. CLASSIFICATION OF WATER TREATMENT PLANTS.

<u>GRADE</u>	<u>TREATMENT</u>	<u>POPULATION</u>
I	Iron and/or Manganese removal by oxidation only, chlorination only, or aeration only, or any combination of these processes. Fluoridation	1,000 or less
II	Zeolite Softening	5,000 or less
	Iron and/or Manganese removal by oxidation only, chlorination only, stabilization only, aeration only, or any combination of these processes.	1,000 to 15,000
III	Coagulation or lime and/or lime-soda softening and sedimentation and filtration.	15,000 or less
	Zeolite Softening	5,000 and over
	Iron and/or Manganese removal by oxidation only, chlorination only, stabilization only, aeration only, or any combination of these processes.	15,000 and over
IV	Coagulation or lime and/or lime-soda softening and sedimentation and filtration.	15,000 and over

#### Section 5. CLASSIFICATION OF WATER DISTRIBUTION SYSTEMS.

<u>GRADE</u>	<u>POPULATION</u>
I	15,000 or less
II	15,000 to 50,000
III	50,000 and over

## Section 6. OPERATOR EDUCATION AND EXPERIENCE QUALIFICATIONS.

6.1 All applicants shall meet the following educational and experience requirements for the grade of certificate applied as shown below. The experience qualifications shall be in the same field as the type of certificate for which the applicant is applying.

### Grade I

a. Two years high school or equivalent and one year of direct responsibility or one year in operation of water distribution system, water treatment plant or wastewater treatment plant, or

b. Produce educational qualifications and experience satisfactory to the board of certification and demonstrate ability to operate a water distribution system, water treatment plant, or wastewater treatment plant with limited supervision.

### Grade II

a. High school education or equivalent and one year of direct responsibility without substitution as allowed in Sec. 6.2 or three years in operation of a water distribution system, water treatment plant, or wastewater treatment plant, or

b. Two years high school or equivalent and four years of direct responsibility or six years in operation of a water distribution system, water treatment plant, or wastewater treatment plant.

### Grade III

a. Two years college and three years of direct responsibility or five years in operation of a water distribution system, water treatment plant, or wastewater treatment plant of a Grade II or higher classification facility, or

b. High school education or equivalent and four years of direct responsibility or six years in operation of a water distribution system, water treatment plant, or wastewater treatment plant of a Grade II or higher classification facility.

### Grade IV

a. A degree of Bachelor of Science in engineering (with special courses or two years experience in sanitary sciences) and two years in direct responsibility or four years in operation of a Grade III or higher classification of a water treatment or wastewater treatment plant, or

b. Four years of college and three years of direct responsibility or five years in operation of a Grade III or higher classification of a water treatment or wastewater treatment plant, or

c. High school education or equivalent and six years of direct responsibility or eight years in operation of a Grade III or higher classification of a water treatment plant or wastewater treatment plant.

6.2 The following substitutions or equivalents for required experience or training may be accepted by the board of certification.

a. Two years experience in operation of a water distribution system, water treatment plant, or wastewater treatment plant may be substituted for one year of high school or two years of grammar school education.

b. Satisfactory completion of training courses accepted by the board of certification may be considered as equivalent to:

Two years of grade school, or two years of experience in operation, or one year of direct responsibility in operation, or one year of high school, or one-half year of college, non-engineering.

c. The secretary shall record in such applicant's file the substitute qualifications that have been accepted by the board in the issuance of any certificate.

d. The board of certification may waive the experience requirements in exceptional situations.

#### Section 7. EXAMINATIONS.

7.1 The fee for the initial certificate issued in each grade shall be three (3) dollars, and for each renewal two (2) dollars. The initial certification fee includes the cost of taking the examination.

7.2 Applications for admission to examination shall be on forms provided by the board of certification. Application forms shall be filed with the board of certification for their review prior to the examination. The required fee shall accompany each application.

7.3 If an applicant fails the examination, the initial certification fee which accompanies the application shall be retained by the board of certification. This initial fee shall entitle the applicant to re-examination.

#### Section 8. INTER-STATE ENDORSEMENT.

The board of certification may consider for recommendation to the commissioner certification without examination of an applicant who was certified by a governmental agency or organization of another state. The applicant must have passed an examination at least equivalent to the examinations offered by the board of certification and meet the education and experience qualifications as set forth in section 6. The board of certification may at its discretion require the applicant to successfully pass the Iowa examination.

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